NPDES

COLSF 7.5 VI

Technical Memorandum

TO: Mike Kuntz, Washington State Department of Ecology

FROM: Lawrence D. Beard, P.E., Landau Associates, Inc. LB

RE: **BACKGROUND WATER QUALITY DATA, PREDICTED TREATED GROUNDWATER QUALITY, AND EVALUATION OF POTENTIAL NPDES DISCHARGE CRITERIA FOR COLBERT LANDFILL PHASE II EFFLUENT**

DATE: September 25, 1992

This memorandum presents the results of background water quality analyses, prediction of treated groundwater (effluent) quality, and the evaluation of potential NPDES discharge criteria for effluent from the proposed Colbert Landfill Phase II treatment facility. The scope of these activities is based on Landau Associates' June 26, 1992 technical memorandum, the Washington State Department of Ecology (Ecology) July 27, 1992 letter, and discussions between Larry Beard (Landau Associates) and Bonnie Rose (Ecology). This memorandum was prepared by Landau Associates at the request of Spokane County.

BACKGROUND WATER QUALITY SAMPLING AND ANALYSES

Characterization of background water quality included sampling and analysis of representative groundwater monitoring wells and surface water from the Little Spokane River. Groundwater samples were collected at the site on July 21-22, 1992, from groundwater Monitoring Wells CD-21C1, CD-30A, CD-46C2, and CD-47C2. A surface water sample was collected from the Little Spokane River on July 22, 1992 at the proposed Phase II outfall location. Analytical data are presented in Table 1.

All groundwater samples were analyzed for constituents identified in Landau Associates' June 26, 1992 memorandum, including metals (total and dissolved), inorganic/conventional parameters, organochlorine pesticides/PCBs, organophosphorus pesticides, and herbicides. Samples were not analyzed for dissolved arsenic (V), arsenic (III), or chromium (VI). Also, the sample from Monitoring Well CD-30A was not analyzed for turbidity. These omissions resulted from laboratory error, but do not significantly affect the evaluation of potential NPDES criteria.

why not?

No semivolatile compounds were detected in the sample from Monitoring Well CD-21C1. Since groundwater in the Monitoring Well CD-21C1 vicinity is anticipated to have the highest impact from the Colbert Landfill, samples from other wells were not analyzed for these compounds. This approach was implemented with concurrence of Ecology.

The sample collected from the Little Spokane River was analyzed for total metals, inorganics/conventionals, organochlorine pesticides/PCBs, organophosphorus pesticides, herbicides, and other parameters. Although analyses for dissolved metals were requested in Ecology's July 27, 1992 letter, an equipment failure prevented collection of a filtered sample. This omission does not significantly impact the evaluation of potential NPDES criteria because the criteria are based on total metal concentrations, and total metal concentrations for all potential NPDES monitoring parameters are low or below method detection limits.

Groundwater and surface water samples were also analyzed for selected major ions at the request of Ecology in its April 28, 1992 comment letter on the draft Phase II Treatment and Discharge Plan. The major ions analyzed for were bicarbonate and total alkalinity, calcium, chloride, magnesium, nitrates, potassium, silicon, sulfate, hardness, and pH.

A quality assurance/quality control review of the analytical data was performed using EPA guidelines (EPA 1988a,b); data qualifiers are provided following EPA Contract Laboratory Program (CLP) guidelines (EPA 1988c). The data validation considered the following elements:

- Holding times
- Detection limits
- Surrogate recoveries
- Matrix spike results
- Blank analysis results
- Duplicate analysis results
- Data completeness.

No data were rejected as a result of data validation. All data met validation guidelines with the following exceptions:

- All samples exceeded the holding time of 48 hours for dissolved oxygen, total residual chlorine, and fecal coliform bacteria (possibly biassing the results low). Consequently, these results are flagged with a "J."
- Nitrate analysis exceeded the holding time of 48 hours for the Monitoring Well CD-47C2 groundwater sample. However, the laboratory reanalyzed the sample and the results were within quality control precision requirements. Consequently, the data were not flagged.
- Malathion recovery was 20 percent for the laboratory control sample, outside of the control limits of 40-120 percent. Although undetected, malathion results may be biased low. Consequently, malathion results are flagged "J".

ESTIMATED EFFLUENT QUALITY

Groundwater Contributions

During Phase II remedial action, groundwater from the vicinity of the sampled wells will contribute different percentages to the total effluent. It is expected that the areas surrounding the wells will contribute the following percentages:

Monitoring Well Designation	Estimated Relative Contribution (%)
CD-21C1	15
CD-30A	33
CD-46C2	26
CD-47C2	26

It was initially intended that a composite from these wells would be prepared and analyzed using the relative contributions identified above. However, samples from the wells were individually analyzed at the request of Ecology, and the estimated total effluent concentrations presented in Table 1 were calculated from individual well data.

Effluent Contributions From Sequestering Agent and Batch Cleaning Solution

The estimated effluent concentrations in Table 1 reflect addition of a sequestering agent to the groundwater to control scale accumulation in the stripping tower; and addition of an acid batch cleaning solution to the effluent stream, following periodic batch cleaning to remove accumulated scale.

Phosphate and nonphosphate sequestering agents are available for calcium carbonate scale control. Although nonphosphate sequestering agents do not have a significant performance record, bench scale test results indicate that a nonphosphate sequestering agent (NALCO 8357 polyacrylate scale inhibitor) may provide adequate scale control for Phase II operation. Also, material safety data sheet (MSDS) information, previously provided to Ecology, indicates this nonphosphate sequestering agent is nontoxic to humans and aquatic organisms at the planned effluent concentrations. Therefore, nonphosphate sequestering agents will be evaluated during initial Phase II operation; and, if a nonphosphate sequestering agent performs adequately, it will be used for long-term scale control. If the nonphosphate sequestering agent does not perform adequately, a phosphate sequestering agent will be used. The estimated effluent concentration in Table 1 includes an estimated sequestering agent phosphorus contribution of 0.54 ppm, based on a phosphate sequestering agent addition rate of 10 ppm. Estimated effluent concentrations

include only the total dissolved solids (TDS) contribution from the nonphosphate sequestering agent, because MSDS data indicate it does not contain any constituents of concern.

The acid batch cleaning solution will contain calcium carbonate (from dissolved scale) and low concentrations of heavy metals that are present in the accumulated scale and the hydrochloric acid used for batch cleaning. The rate of scale accumulation (and, therefore, the frequency of acid batch cleaning) cannot be accurately determined until the Phase II remedial action is operating. However, bench scale test results, to be presented in the final Phase II Treatment and Discharge Plan, provide an upper bound to potential scale accumulation, and were used to develop the estimated acid batch cleaning solution constituent concentrations and the impact on estimated effluent concentrations and mass loadings. These estimates were made assuming a scale accumulation rate of 60 lb per day, a batch cleaning frequency of approximately every 280 days, use of 3,600 gal of 35 percent HCL, an effluent discharge rate of 1,600 gpm, and an acid batch cleaning solution addition rate to the effluent of 0.1 gpm.

Comparison of Estimated Effluent Quality to River Background

Comparison of estimated effluent water quality data to Little Spokane River background water quality data indicates that estimated effluent concentrations for some constituents are higher than for the Little Spokane River, but are lower for other constituents. Estimated effluent concentrations are higher for barium, calcium, magnesium, potassium, silicon, alkalinity, hardness, nitrate, phosphorus, and TDS. However, Little Spokane River concentrations are higher for iron, chemical oxygen demand (COD), chloride, fecal coliform, and total organic carbon (TOC). Although each exhibits different characteristics, estimated water quality for effluent water and for the Little Spokane River appear to be similar.

POTENTIAL NPDES CRITERIA

Ecology identified a number of potential NPDES criteria in its April 28, 1992 comment letter on the draft Phase II Treatment and Discharge Plan. These potential NPDES criteria, presented in Table 2, consist of freshwater aquatic criteria identified in WAC 173-201 (-045 Class A waters, and -047) and Federal freshwater aquatic and human health water quality criteria (EPA 1986). During the June 19, 1992 meeting with Ecology, it was agreed that NPDES criteria would only be established for constituents detected in groundwater at levels of concern and above their practical quantitation limit (PQL). It was also agreed that analyses would be performed using standard EPA methods.

Comparison of the estimated effluent concentration in Table 1 to the potential NPDES parameters in Table 2 indicate that almost all parameters, except the volatile organic constituents of concern, are either not detected or are significantly below the potential NPDES criteria. No pesticides, PCBs, herbicides, semivolatile organic compounds, or miscellaneous parameters were detected. Barium, iron, and manganese were the only metals detected that are potential NPDES parameters; however, the estimated effluent concentrations for these parameters are about 2-9 times less than the potential NPDES criteria.

Ammonia, nitrate, pH, and TDS were the only conventional parameters with identified potential NPDES criteria that were detected in groundwater. Ammonia and nitrate were detected at concentrations significantly below the potential NPDES criteria.

The estimated maximum Phase II effluent pH is 8.4, based on laboratory bench scale tests and Phase I pilot studies. The potential NPDES criteria for pH is 8.5, based on Washington water quality criteria (WAC 173-201-45). Although the bench scale tests conducted indicated effluent pH could be as high as 8.5, this is attributed to the excessive aeration used to cause scale formation during these tests. The maximum pH observed during Phase I pilot studies was about 8.3. Therefore, it is probable that during Phase II operation a pH of 8.5 will be approached, but not exceeded.

It is important to note that the pH of the Little Spokane River was measured at 8.5 on September 4, 1992, and a subsequent measurement on September 9, 1992 indicated a pH of 8.4. The September pH value is probably a seasonal, low-flow phenomena, but it indicates that the background river pH will probably meet or exceed potential NPDES criteria for pH on at least an intermittent basis. As a result, NPDES pH discharge criteria should be set at a pH of 8.5 or background river pH, whichever is higher.

The estimated effluent concentration for TDS of 465 mg/L exceeds the potential NPDES criteria of 250 µg/L, based on federal water quality standards (EPA 1986). Hardness, alkalinity, and TDS data in Table 1 indicate that effluent water TDS results largely from the presence of calcium carbonate. However, TDS criteria are based on possible physiological effects, taste, and water system maintenance costs for sulfates and sodium, constituents that do not represent an appreciable percentage of TDS for Phase II effluent. As a result, the potential NPDES criteria for TDS identified in the federal water quality standards should not be applied to Phase II effluent discharges.

Potential NPDES criteria were identified for four of the six volatile organic constituents of concern detected at the site, including tetrachloroethylene (PCE), 1,1-dichloroethylene (DCE), 1,1,1-trichloroethane (TCA), and trichloroethylene (TCE). Estimated effluent concentrations

presented in Table 1 for these constituents indicate that PCE, DCE, and TCE concentrations will exceed their respective potential NPDES criteria. However, the estimated effluent concentrations for the constituents of concern are set at the discharge limits identified in the Project Consent Decree. The anticipated effluent concentrations for these constituents are actually less than 1 ppb, based on the results of the Phase I pilot study. Therefore, effluent concentrations for these constituents are anticipated to be below potential NPDES criteria. However, the discharge limits established for the site were developed in conjunction with EPA and Ecology, and the application of more stringent criteria at this time would not be appropriate. Applying NPDES criteria consistent with Table 2 would not conflict with the Project Consent Decree discharge limits if a dilution zone is established for NPDES sampling.

WAC 173-201-045 identifies a maximum discharge criteria for total dissolved gasses of 110 percent of saturation. The percent saturation of total dissolved gases for effluent cannot be determined until Phase II operation, but the selected treatment method (air stripping) may result in exceedance of this criteria because of the entrainment of air during treatment. However, the impact of effluent potentially supersaturated with air should be minimized by the relatively small maximum contribution of the effluent to total river flow of less than 5 percent of $Q_{7,10}$ low flow[1]. If the discharge criteria for total dissolved gases is exceeded at the point of discharge, it is anticipated that the criteria can be attained at the boundary of a dilution zone.

The potential NPDES criteria for some constituents (primarily metal, pesticide, PCB and semivolatile compounds with carcinogenic criteria) are significantly below the PQLs for background water quality analyses. Therefore, criteria could be exceeded for some constituents, but the exceedances would be undetected. There are a number of factors that suggest the potential for this to occur is limited:

- Data presented in Project documents do not indicate that significant quantities of waste containing these constituents were disposed of at the Colbert Landfill
- The parameters in question tend to have relatively high soil partition coefficients and, thus, are not highly mobile in groundwater
- These constituents were not detected in groundwater samples from any of the monitoring wells sampled for this investigation. Because the source of groundwater in the vicinity of these wells varies, it is likely that the presence of these constituents (if present at all) would be limited to a few wells, and concentration would be reduced by the contribution of groundwater extracted from other areas

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[1] $Q_{7,10}$ is the estimated 7-day average flow that is exceeded (on the low side) only once every 10 years, and is equal to 75 cfs for the Little Spokane River (EPA 1987).

- Groundwater solute transport modeling accomplished for design of the treatment facility (Landau Associates 1992) indicates extraction system water quality will improve significantly within the first 2 years of operation (as downgradient "clean" water reaches the extraction wells). Therefore, any low or undetected concentrations of potential constituents of concern will be further reduced with time.

It is also important to recognize that the health-based potential NPDES criteria for many of these constituents are in the part per trillion range, or lower. In most cases, treatment technologies do not currently exist that can achieve these criteria, particularly for the relatively high flow rates of 1,000 gpm (or more) anticipated for the Phase II remedial action. Therefore, even if a criterion exceedance occurred for one or more of these parameters, it is likely that effective treatment would be either technically unfeasible or impracticable.

RECOMMENDED NPDES MONITORING PARAMETERS AND ASSOCIATED CRITERIA

The background water quality data and estimated Phase II effluent concentrations presented in this memorandum, and potential NPDES monitoring parameters identified by Ecology, provide an adequate basis for developing NPDES monitoring parameters and discharge criteria for most of these parameters. Recommended monitoring parameters and criteria are presented in Table 3 for Ecology's review and consideration.

REFERENCES

Landau Associates, Inc. 1992. Final Extraction Well Plan, Phase II Remedial Design/Remedial Action, Colbert Landfill, Spokane, Washington. Prepared for Spokane County Utilities Department, August 7.

U.S. Environmental Protection Agency. 1986. EPA Quality Criteria for Water 1986. EPA 440/5-86-001.

U.S. Environmental Protection Agency. 1987. Record of Decision for Interim Final Remedial Action, Colbert Landfill Site, Colbert, Washington. September.

U.S. Environmental Protection Agency. 1988a. Laboratory Data Validation, Functional Guidelines for Evaluating Inorganics Analysis, Hazardous Site Evaluation Division.

U.S. Environmental Protection Agency. 1988b. Laboratory Data Validation, Functional Guidelines for Evaluating Organics Analysis, Hazardous Site Evaluation Division.

U.S. Environmental Protection Agency. 1988c. Contract Laboratory Program (CLP) Statement of Work for Organics Analysis. Multi-Media, Multi-Concentration, February.

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This memorandum reflects Spokane County's understanding of the investigation and analyses needed to develop NPDES criteria for discharging treated groundwater from the Colbert Landfill Phase II remedial action to the Little Spokane River, based on discussions with Ecology during the June 19, 1992 meeting. NPDES criteria must be established prior to resuming design of the final remedial action to minimize the potential of designing a remedial action that does not achieve NPDES discharge criteria. To avoid further delays in design of the Phase II remedial action, Spokane County requests a verbal response from Ecology as soon as this memorandum has been reviewed to determine whether there is substantive agreement between Ecology and Spokane County as to NPDES monitoring parameters and criteria. If substantive agreement is not achieved, Spokane County requests that a meeting be held to resolve any disagreement prior to Ecology issuing a written response to this memorandum. Spokane County believes this approach will expedite resolution of any NPDES issues and allow resumption of Phase II design as soon as possible.

If you have any questions, please contact Dean Fowler (Spokane County) or Landau Associates.

LDB/sms
No. 124001.78

cc: Dean Fowler, Spokane County
Neil Thompson, U.S. EPA
Lyle Diedieker, Ecology & Environment, Inc.

TABLE 1
BACKGROUND WATER QUALITY DATA AND ESTIMATED EFFLUENT QUALITY
COLBERT LANDFILL RD/RA PROJECT
(Concentrations in ug/L except when indicated otherwise)

Constituent	Analytical Method	CD21C1	CD47	CD46	CD46-DUP	CD30A	Little Spokane River	Estimated Acid Batch Cleaning Solution Concentration	Estimated Effluent Concentration (a)	Estimated Effluent Mass Loading (b) (lb/day)
METALS (Total, in mg/l)										
Aluminum	EPA 6010	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	76	0.055	NC
Antimony	EPA 6010	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	3 <	0.05 U	NC
Arsenic	EPA 7060	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	11	0.006	NC
Arsenic (pent)	EPA 7060	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NC	0.005 U	NC
Arsenic (tri)	EPA 7060	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NC	0.005 U	NC
Barium	EPA 6010	0.271	0.079	0.292	0.297	0.114	0.052	36	0.18	3.4
Beryllium	EPA 6010	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	1 <	0.005 U	NC
Cadmium	EPA 6010	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	1 <	0.003 U	NC
Calcium	EPA 6010	172	60.6	140	143	104	30.3	42000	115	2200
Chromium (hex)	EPA 7195/6010	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NC	0.01 U	NC
Chromium (total)	EPA 6010	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	1 <	0.005 U	NC
Copper	EPA 6010	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	1	0.01 U	NC
Iron	EPA 6010	0.033	0.02 U	0.065	0.068	0.02 U	0.099	192	0.046	0.88
Lead	EPA 7421	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	5 <	0.002 U	NC
Magnesium	EPA 6010	60.3	19.5	48.6	49.5	22.5	7.37	294	34	660
Manganese	EPA 6010	0.014	0.005 U	0.077	0.078	0.005 U	0.018	6	0.025	0.49
Mercury	EPA 7470	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	5 <	0.0008	NC
Nickel	EPA 6010	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.24 <	0.02 U	NC
Potassium	EPA 6010	4.9	2.9	3.8	4.1	3.3	2 U	56 <	3.6	70
Selenium	EPA 7740	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	11 <	0.006	NC
Silicon	EPA 6010	12.9	11.5	12.3	2.6	9.64	8.34	10 <	11.3	220
Silver	EPA 6010	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	1 <	0.01 U	NC
Thallium	EPA 7841	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	11 <	0.006	NC
Zinc	EPA 6010	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	308	0.03	0.56
METALS (Dissolved, in mg/l)										
Aluminum	EPA 6010	0.056	0.05 U	0.05 U	0.055	0.05 U	NT	76	0.056	NC
Antimony	EPA 6010	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NT	3 <	0.050 U	NC
Arsenic	EPA 7060	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NT	11	0.006 U	NC
Arsenic (pent)	WF	NT	NT	NT	NT	NT	NT	NC	NC	NC
Arsenic (tri)	WF	NT	NT	NT	NT	NT	NT	NC	NC	NC
Barium	EPA 6010	0.269	0.081	0.301	0.303	0.111	NT	36	0.179	NC
Beryllium	EPA 6010	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NT	1 <	0.005 U	NC
Cadmium	EPA 6010	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	NT	1 <	0.003 U	NC
Calcium	EPA 6010	171	62.4	144	145	102	NT	42000	116	NC
Chromium (hex)	EPA 7195/6010	NT	NT	NT	NT	NT	NT	NC	NC	NC
Chromium (total)	EPA 6010	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NT	1 <	0.005 U	NC
Copper	EPA 6010	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NT	1	0.010 U	NC
Iron	EPA 6010	0.033	0.02 U	0.05	0.051	0.02 U	NT	192	0.042	NC
Lead	EPA 7421	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	NT	5 <	0.002 U	NC
Magnesium	EPA 6010	59.8	20.7	49.4	50	22	NT	294	34.5	NC
Manganese	EPA 6010	0.014	0.005 U	0.075	0.077	0.005 U	NT	6	0.025	NC
Mercury	EPA 7470	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	NT	5 <	0.001 U	NC
Nickel	EPA 6010	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NT	0.24 <	0.020 U	NC
Potassium	EPA 6010	5	3.3	4	3.8	3.3	NT	56 <	3.74	NC
Selenium	EPA 7740	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NT	11 <	0.006	NC
Silicon	EPA 6010	12.8	11.9	12.5	12.7	9.41	NT	10 <	11.37	NC
Silver	EPA 6010	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NT	1 <	0.010 U	NC
Thallium	EPA 7841	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	NT	11 <	0.006	NC
Zinc	EPA 6010	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NT	308	0.03	NC

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Constituent	Analytical Method	CD21C1	CD47	CD46	CD46-DUP	CD30A	Little Spokane River	Estimated Acid Batch Cleaning Solution Concentration	Estimated Effluent Concentration (a)	Estimated Effluent Mass Loading (b) (lb/day)
INORGANICS/CONVENTIONALS										
Alkalinity (mg/L)	EP 310.1	642	221	554	556	325	107	NC	405	7800
Ammonia (total as N) (mg/L)	EP 350.3	0.07	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 <	0.053	NC
Bicarbonate Alkalinity(mg/L)	SM 2320B	642	221	554	556	325	104	NC	405	7800
BOD (mg/L)	EP 405.1	4 U	4 U	4 U	4 U	4 U	4 U	3 <	4 U	NC
COD (mg/L)	EP 410.2	5 U	5 U	5 U	5 U	5 U	10	4 <	5 U	NC
Chloride (mg/L)	EP 300.0	7.2	3.9	270	290	300	340	75220	176	3400
Chlorine-Residual (mg/L)	EP 330.4	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	2 <	0.1 U	NC
Coliform Fecal (CFU/100mL)	SM 9221C	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	50 J	NC	2 U	NC
Color (CU)	EP 110.2	20 U	20 U	20 U	20 U	20 U	20 U	NC	20 U	NC
Cyanide (mg/L)	EP 335.2	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 <	0.01 U	NC
Gases, Total Dissolved	N/A (c)	NT	NT	NT	NT	NT	NT	NC	NC	NC
Hardness (mg/L)	EPA 6010	673	241	563	568	344	106	42000	426	8200
Nitrates (mg/L)	EP 300.0	1.4	5.1	2.8	2.8	2.9	0.6	4	3.2	62
Oil and Grease (mg/L)	EP 413.1	1 U	1 U	1 U	1 U	1 U	1 U	1 <	1 U	NC
Oxygen Dissolved (mg/L)	EP 360.1	1.6 J	7.3 J	4.00 J	3.70 J	8.20 J	8.25 J	NC	5.9	NC
pH (d)	EP 150.1	6.7	7.7	7.2	7.2	7.1	8.5	2	7.2	NC
Phosphorus-Total (mg/L)	EP 365.3	0.24	1.6	0.50	0.50	0.01 U	0.02	1	1.1 (d)	22
Solids Suspended - Nonfilterable (mg/L)	EP 160.2	5 U	5 U	5 U	5 U	5 U	5 U	6	5 U	NC
Solids Dissolved - Filterable (mg/L)	EP 160.1	677	295	591	597	368	127	184000	465	8900
Sulfate (mg/L)	EP 300.0	20	13	12	12	25	16	17	18	340
Sulfide-Hydrogen Sulfide (mg/L)	EP 376.1	2 U	2 U	2 U	2 U	2 U	2 U	2 <	2 U	NC
Temperature (°C) (e)	EP 170.1	13.1	11.9	13.9	13.9	12.1	NT	NC	12.7	NC
TOC (mg/L)	EP 415.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.8	0.4 <	0.5 U	NC
Turbidity (NTU)	EP 180.1	0.1 U	0.2	0.6	NT	NT	NT	NC	NC	NC
ORGANOCHLORINE PESTICIDES/ PCBs										
Aldrin	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
BHC	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Chlordane	EPA 8080	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NC	0.5 U	NC
DDT	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
DDT Metabolite (DDE)	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
DDT Metabolite (TDE)	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Dieldrin	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Endosulfan	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Endrin	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Heptachlor	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Hexachlorocyclohexane (Lindane)	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Hexachlorocyclohexane-Alpha	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
Hexachlorocyclohexane-Beta	EPA 8080	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NC	0.1 U	NC
Methoxychlor	EPA 8080	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NC	0.1 U	NC
PCBs	EPA 8080	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NC	0.2 U	NC
Mirex	EPA 8080	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NC	0.04 U	NC
ORGANOPHOSPHORUS PESTICIDES										
Chlorpyrifos	EPA 8141	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NC	0.5 U	NC
Demeton	EPA 8141	1 U	1 U	1 U	1 U	1 U	1 U	NC	1 U	NC
Guthion	EPA 8141	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NC	0.5 U	NC
Malathion	EPA 8141	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	NC	0.5 U	NC
Parathion-methyl	EPA 8141	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NC	0.5 U	NC
HERBICIDES										
Chlorophenoxy Herbicides (2,4,5,-TP)	EPA 8150	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NC	0.2 U	NC
Chlorophenoxy Herbicides (2,4,-D)	EPA 8150	1 U	1 U	1 U	1 U	1 U	1 U	NC	1 U	NC

TABLE 1
BACKGROUND WATER QUALITY DATA AND ESTIMATED EFFLUENT QUALITY
COLBERT LANDFILL RD/RA PROJECT
(Concentrations in ug/L-except when indicated otherwise)

Constituent	Analytical Method	CD21C1	CD47	CD46	CD46-DUP	CD30A	Little Spokane River	Estimated Acid Batch Cleaning Solution Concentration	Estimated Effluent Concentration (a)	Estimated Effluent Mass Loading (b) (lb/day)
SEMIVOLATILE ORGANICS										
Acenapthene	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Benzidine	EPA 8270	50 U	NT	NT	NT	NT	NT	NC	50 U	NC
Chlorinated Benzenes (f)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Chlorinated Napthalenes (g)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Chloroethyl Ether (bis-2)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Chloroisopropyl Ether (bis-2)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Chloromethyl Ether (bis)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Chlorophenol 2	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Chloro-4,Methyl-3,Phenol	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Dibutyl Phthalate	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Dichlorobenzenes (h)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Dichlorobenzidine 3,3	EPA 8270	20 U	NT	NT	NT	NT	NT	NC	20 U	NC
Dichlorophenol 2,4	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Diethylphthalate	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Dimethyl Phenol 2,4	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Dimethyl Phthalate	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Dinitrotoluene 2,4	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Dinitro-o-cresol 2,4	EPA 8270	20 U	NT	NT	NT	NT	NT	NC	20 U	NC
Diphenylhydrazine 1,2	EPA 8270	20 U	NT	NT	NT	NT	NT	NC	20 U	NC
Di-2-Ethyl Hexyl Phthalate	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Fluoranthene	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Hexachlorobenzene	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Hexachlorobutadiene	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Hexachlorocyclopentadiene	EPA 8270	10 U	NT	NT	NT	NT	NT	NC	10 U	NC
Hexachloroethane	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Isophorone	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Naphthalene	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Nitrobenzene	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Nitrophenols (i)	EPA 8270	50 U	NT	NT	NT	NT	NT	NC	50 U	NC
Nitrosodibutylamine N	EPA 8270	10 U	NT	NT	NT	NT	NT	NC	10 U	NC
Nitrosodiethylamine N	EPA 8270	10 U	NT	NT	NT	NT	NT	NC	10 U	NC
Nitrosodimethylamine N	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Nitrosodiphenylamine N	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Nitrosopyrrolidine N	EPA 8270	10 U	NT	NT	NT	NT	NT	NC	10 U	NC
Pentachlorobenzene	EPA 8270	10 U	NT	NT	NT	NT	NT	NC	10 U	NC
Pentachlorophenol	EPA 8270	30 U	NT	NT	NT	NT	NT	NC	30 U	NC
Phenol	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Phthalate Esters (j)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Polynuclear Aromatic Hydrocarbons (k)	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Tetrachlorobenzene 1,2,4,5	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Trichlorophenol 2,4,5	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
Trichlorophenol 2,4,6	EPA 8270	5 U	NT	NT	NT	NT	NT	NC	5 U	NC
VOLATILE ORGANICS (l)										
1,1-Dichloroethane	EPA 8010	NT	NT	NT	NT	NT	NT	NC	180 (m)	3.5
1,1-Dichloroethylene	EPA 8010	NT	NT	NT	NT	NT	NT	NC	7.0 (m)	0.13
Methylene chloride	EPA 8010	NT	NT	NT	NT	NT	NT	NC	25 (m)	0.48
Tetrachloroethylene	EPA 8010	NT	NT	NT	NT	NT	NT	NC	7.0 (m)	0.13
Trichloroethane 1,1,1	EPA 8010	NT	NT	NT	NT	NT	NT	NC	200 (m)	3.8
Trichloroethylene	EPA 8010	NT	NT	NT	NT	NT	NT	NC	5 (m)	0.1

TABLE 1
BACKGROUND WATER QUALITY DATA AND ESTIMATED EFFLUENT QUALITY
COLBERT LANDFILL RD/RA PROJECT
(Concentrations in ug/L-except when indicated otherwise)

Constituent	Analytical Method	CD21C1	CD47	CD46	CD46-DUP	CD30A	Little Spokane River	Estimated Acid Batch Cleaning Solution Concentration	Estimated Effluent Concentration (a)	Estimated Effluent Mass Loading (b) (lb/day)
MISCELLANEOUS										
Acrolein	EPA 8240	10 U	10 U	10 U	10 U	10 U	10 U	NC	10 U	NC
Acrylonitrile	EPA 8240	100 U	100 U	100 U	100 U	100 U	100 U	NC	100 U	NC

Analytical Methods

EPA SW-846 Test Methods for Evaluating Solid Waste, 1986 with 1987 revisions.
EPA 6010 = Inductively Coupled Plasma Atomic Emission Spectroscopy
EPA 7195 = Chromium, Hexavalent (Coprecipitation)
EPA 8010 = Halogenated Volatile Organics.
EPA 8030 = Acrolein, Acrylonitrile, Acetonitrile.
EPA 8080 = Organochlorine Pesticides and PCBs.
EPA 8141 = Organophosporus Pesticides.
EPA 8150 = Chlorinated Herbicides.
EPA 8240 = GC/MS for Volatile Organics
EPA 8270 = GC/MS for Semivolatile Organics
EPA 8290 = Dibenzo-p-dioxins and furans.
EPA 9010 = Cyanide
WF = Walter Fickin, U.S.G.S. "Separation of As(III) and As(V) in Groundwater".
EP = Methods of Chemical Analysis of Water and Wastes, EPA 1983.
SM = Standard Methods.

Abbreviations and Data Qualifications:

°C = Degrees Centigrade.
ml = milliliter.
NC = Not calculated.
NT = Not tested.
NTU = Nephelometric turbidity units.
U = Undetected at the detection limit given.
J = The analyte was analyzed and positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.
UJ = The analyte was anlyzed for and was not present above the associated value. The associated value may not accurately or precisely represent the concentration necessary to detect the analyte in this sample.
< = The constituent was less than the associated calculated value. The associated value may not accurately or precisely represent the concentration necessary to detect the analyte in this sample.

Footnotes:

(a) This is a calculated value based on the estimated contribution of groundwater to the Phase II system from the vicinity of the sampled wells, and discharge of the batch cleaning solution. The concentration estimate is based on a total extraction rate of 1,600 gpm, with contributions of 15%, 33%, 26%, and 26% for Wells CD-21C1, CD-30A, CD-46C2, and CD-47C2, respectively, and a 0.1 gpm discharge rate of the batch cleaning solution.
(b) Based on effluent discharge rate of 1,600 gpm at the estimated effluent concentration.
(c) Not listed in any available method references.
(d) Includes 0.54 mg/l contribution from phosphate sequestering agent.
(e) Values are based on field results.
(f) The sum of 1,2-, 1,3-,1,4-dichlorobenzene, 1,2,4-trichlorobenzene, and hexachlorobenzene.
(g) Value is for 2-chloronaphthalene only.
(h) The sum of 1,2-, 1,3-, and 1,4-dichlorobenzene.
(i) The sum 2- and 4-nitrophenol and 2,4-dinitrophenol.
(j) The sum of dimethylphthalate, diethylphthalate, di-n-butylphthalate, butylbenzlphthalate, bis(2-ethylhexyl)phthalate and di-n-octylphthalate.
(k) The sum of carcinogenic PAH: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.
(l) Volatile organics were not tested for, with the concurrance of Ecology, because of the adequacy of existing data.
(m) Effluent discharge standards (Evaluation Criteria) from Project Consent Decree, except for 1,1-DCA (which is highest measured concentration).

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TABLE 2

POTENTIAL NPDES WATER QUALITY CRITERIA
COLBERT LANDFILL RD/RA PROJECT
(Concentrations in ug/L)

Constituent	PQL (b)	Federal Water Quality Criteria (a)				State WAC 173-201
		Aquatic Fresh Chronic	Water and Fish Ingestion (c)	Fish Consumption Only	Drinking Water MCL	Fresh Chronic (d)
METALS						
Antimony	60.0	1600.0 (e)	146.0	45000.0		
Arsenic	10.0		0.0 (f)	0.0 (f)	50.0	
Arsenic (pent)	-	48.0 (e)				
Arsenic (tri)	-	190.0				
Barium	200.0		1,000		1,000	
Beryllium	5.0	5.3 (e)	0.0 (f)	0.1 (f)		
Cadmium	5.0	1.1 (g)	10.0		10.0	1.1 (g,h)
Chromium (hex)	10.0	11.0	50.0		50.0	11.0 (h)
Chromium (tri)	10.0	210.0 (g)	1.7E+05	3.4E+06	50.0	210.0 (g,h)
Copper	25.0	12.0 (g)				12.0 (g,h)
Iron	100.0	1000.0	300.0			
Lead	3.0	3.2 (g)	50.0		50.0	3.2 (g,h)
Manganese	15.0		50.0	100.0		
Mercury	0.2	0.0	0.1	0.1	2.0	0.0 (h)
Nickel	40.0	160.0 (g)	13.4	100.0		160.0 (g,h)
Selenium	5.0	35.0	10.0		10.0	35.0 (h)
Silver	10.0	0.1	50.0		50.0	
Thallium	10.0	40.0 (e)	13.0	48.0		
Zinc	20.0	110.0 (g)				110.0 (g,h)
INORGANICS/CONVENTIONALS						
Alkalinity	1.0	20,000 (i)				
Ammonia (total as N)	0.0	1808.0 (h,j,k)				1808.0 (h,j,k)
Chlorine (residual)	0.1	11.0				11.0 (h)
Coliform Fecal	N/A				<1/100mlg	<100/100ml
Color	1.0	25.0 (l)				
Cyanide	10.0	5.2	200.0			5.2 (h)
Gasses, Total Dissolved	N/A	110% saturation (k,m)				110% saturation (k,n)
Nitrates	N/A		10,000		10,000	
Oil and Grease	5.0	Surface water to be free of floating oil --				
Oxygen Dissolved	0.1	8000.0 (l,m)				8000.0 (l,n)
pH	N/A	6.5-9.0 (o)				6.5-8.5 (o)
Solids Suspended	N/A	(p)				
Solids Dissolved	N/A		2.5E+05			
Sulfide-Hydrogen Sulfide	0.1	2.0				
Temperature (°C)	N/A	18.0 (n,q)				18 C (n)
TOC						
Turbidity (NTU)	0.5					<5 NTU over BKG (n)

TABLE 2

POTENTIAL NPDES WATER QUALITY CRITERIA
COLBERT LANDFILL RD/RA PROJECT
(Concentrations in ug/L)

Constituent	PQL (b)	Federal Water Quality Criteria (a)				State WAC 173-201
		Aquatic Fresh Chronic	Water and Fish Ingestion (c)	Fish Consumption Only	Drinking Water MCL	Fresh Chronic (d)
ORGANOCHLORINE PESTICIDES/PCBs						
Aldrin	0.1	3.0 (k)	7.4E-05 (f)	7.9E-05 (f)		
BHC	0.1	100.0 (e,k)				
Chlordane	0.1	0.0	4.6E-04 (f)	4.8E-04		0.0 (g,r)
DDT	0.1	0.0	2.4E-05 (f)	2.4E-05 (f)		
DDT Metabolite (DDE)	0.1	1050.0 (e,k)				
DDT Metabolite (TDE)	N/A	0.1 (e,k)				
Dieldrin	0.02, 0.1	0.0	7.0E-05 (f)	7.6E-04 (f)		
Endosulfan	0.14, 0.04; 0.1	0.1	74.0	159.0		0.1 (r)
Endrin	0.06, 0.1	0.0	1.0		0.2	0.0 (r)
Heptachlor	0.1	0.0	2.6E-04 (f)	2.9E-04 (f)		0.0 (r)
Hexachlorocyclohexane (Lindane)	0.1	0.1	0.0 (f)	0.1 (f)	4.0	0.1 (r)
Hexachlorocyclohexane-Alpha	0.1		0.0 (f)	0.0 (f)		
Hexachlorocyclohexane-Beta	0.1		0.0 (f)	0.1 (f)		
Methoxychlor	0.5	0.0	100.0		100.0	
PCBs	1.0	0.0	7.9E-05 (f)	7.9E-05		0.0 (r)
Mirex	10.0	0.0				
Toxaphene	5.0	0.0	7.1E-04 (f)	7.3E-04 (f)	5.0	0.0 (h)
ORGANOPHOSPHORUS PESTICIDES						
Chlorpyrifos	0.7	0.0				0.0 (h)
Demeton	1.2	0.1				
Guthion	N/A	0.0				
Malathion	50.0	0.1				
Parathion	10.0	0.0				0.0 (h)
HERBICIDES						
Chlorophenoxy Herbicides (2,4,5,-TP)	1.7		10.0			
Chlorophenoxy Herbicides (2,4,-D)	12.0		100.0			
SEMIVOLATILE ORGANICS						
Acenapthene	10.0	520.0 (e)				
Benzidine	N/A	2,500	1.2E-04 (f)	5.3E-04 (f)		
Chlorinated Benzenes	N/A (s)	50.0 (e)				
Chlorinated Napthalenes	N/A (s)	1600.0 (e,k)				
Chloroethyl Ether (bis-2)	10.0		0.0 (f)	1.4 (f)		
Chloroisopropyl Ether (bis-2)	10.0		34.7	4360.0		
Chloromethyl Ether (bis)	N/A		0.0038 (f)	0.0 (f)		
Chlorophenol 2	10.0	2,000 (e)				
Chloro-4,Methyl-3,Phenol	10.0	30.0 (e,k)				

TABLE 2

POTENTIAL NPDES WATER QUALITY CRITERIA
COLBERT LANDFILL RD/RA PROJECT
(Concentrations in ug/L)

Constituent	PQL (b)	Federal Water Quality Criteria (a) Aquatic Fresh Chronic	Water and Fish Ingestion (c)	Fish Consumption Only	Drinking Water MCL	State WAC 173-201 Fresh Chronic (d)
SEMIVOLATILE ORGANICS (continued)						
Dibutyl Phthalate	10.0		35,000	1.5E+05		
Dichlorobenzenes	10.0	763.0 (e)	400.0	2600.0		
Dichlorobenzidine	20.0		0.0 (f)	0.0 (f)		
Dichlorophenol 2,4	10.0	365.0 (e)	3,090			
Diethylphthalate	10.0		3.5E+05	1.8E+06		
Dimethyl Phenol 2,4	10.0	2120.0 (e,k)				
Dimethyl Phthalate	10.0		3.1E+05	2.9E+06		
Dinitrotoluene 2,4	10.0		0.1 (f)	9.1 (f)		
Dinitro-o-cresol 2,4	50.0		13.4	765.0		
Diphenylhydrazine 1,2	N/A	270.0 (k)				
Di-2-Ethyl Hexyl Phthalate	10.0		15,000	50000.0		
Fluoranthene	10.0	3980.0 (e,k)	42.0	54.0		
Hexachlorobenzene	10.0	3.7	7.2E-04 (f)	7.4E-04 (f)		
Hexachlorobutadiene	10.0	9.3 (e)	0.5 (f)	50.0 (f)		
Hexachlorocyclopentadiene	10.0	5.2 (e)	206.0			
Hexachloroethane	10.0	540.0 (e)	1.9	8.7		
Isophorone	10.0	117000.0 (e,k)	5,200	5.2E+05		
Naphthalene	10.0	620.0 (e)				
Nitrobenzene	10.0	17000.0 (e,k)	19,800			
Nitrophenols	50.0	150.0 (e)				
Nitrosodibutylamine N	10.0		0.0 (f)	0.6 (f)		
Nitrosodiethylamine N	20.0		8.0E-04 (f)	1.2 (f)		
Nitrosodimethylamine N	100.0		0.0014 (f)	16.0 (f)		
Nitrosodiphenylamine N	10.0		4.9 (f)	16.1 (f)		
Nitrosopyrrolidine N	40.0		0.0 (f)	91.9 (f)		
Pentachlorobenzene	10.0		74.0	85.0		
Pentachlorophenol	50.0	13.0 (t)	1,010		1000.0	
Phenol	10.0	2,560 (e)	3,500			
Phthalate Esters	N/A (s)	3.0 (e)				
Polynuclear Aromatic Hydrocarbons	N/A (s)		0.0 (f)	0.0 (f)		
Tetrachlorobenzene 1,2,4,5	10.0		38.0	48.0		
Trichlorophenol 2,4,5	50.0		2,600			
Trichlorophenol 2,4,6	10.0	970.0 (e)	1.2 (f)	3.6 (f)		
VOLATILE ORGANICS						
Dichloroethylenes	1.3	11600.0 (e,k)	0.0 (f)	1.9 (f)		
Tetrachloroethylene	3.0	840.0 (e)	0.8 (f)	8.9 (f)		
Trichloroethane 1,1,1	0.3		18,400	1.03E+06	200.0 (v)	
Trichloroethylene	1.2	21900.0 (e)	2.7 (f)	80.7 (f)	5.0 (v)	

TABLE 2

POTENTIAL NPDES WATER QUALITY CRITERIA
COLBERT LANDFILL RD/RA PROJECT
(Concentrations in ug/L)

Constituent	PQL (b)	Federal Water Quality Criteria (a) Aquatic Fresh Chronic	Water and Fish Ingestion (c)	Fish Consumption Only	Drinking Water MCL	State WAC 173-201 Fresh Chronic (d)
MISCELLANEOUS						
Acrolein	7.0	21.0 (e)	320.0	780.0		
Acrylonitrile	5.0	2600.0 (e)	0.1 (f)	0.7 (f)		

N/A Not available.
°C = Degrees Centigrade.
MCL = maximum contaminant level
ml = milliliter.
NTU = National turbidity units.

(a) Quality Criteria for Water 1986 (EPA 440/5-86-001).
(b) PQL based on the analytical method identified in Table 1.
(c) Values presented in this column are human health-based only.
(d) Freshwater chronic criteria from WAC 173-201-047, except where noted otherwise
(e) Insufficient data to develop criteria. Value presented is the LOEL - lowest observed effect level.
(f) Human health criteria for carcinogens reported for three risk levels. Value presented is the 10-6 risk level.
(g) Hardness dependent criteria (100 mg/L used)
(h) A 4-day average concentration not to be exceeded more than once every three years on the average.
(i) The value represents a minimum concentration.
(j) Concentration based on pH = 6.5, temperature = 10°C, and salmonids present.
(k) Value presented is based on fresh acute criteria in absence of fresh chronic values.
(l) Criteria based on most stringent maximum value for sources of industrial water supply.
(m) State criteria based on interpretation of federal criteria.
(n) Criteria based on WAC 173-201-045 for general use ,Class A river.
(o) The values represent an acceptable range.
(p) Suspended solids should not reduce depth of photosynthetic compensation point by more than 10% from seasonal norm.
(q) A 1-hour average concentration not to be exceeded more than once every three years on the average.
(r) A 24-hour average not to be exceeded.
(s) See individual analytes for PQL and analytical method.
(t) pH dependent criteria (7.8 pH used)
(u) Effective August 8, 1987 FR Vol. 42, No. 130.

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TABLE 3

RECOMMENDED NPDES MONITORING PARAMETERS AND CRITERIA

Recommended Monitoring Parameter	Recommended Discharge Criteria[a]	Recommended Maximum Mass Loadings[b] (lb/day)	Recommended Monitoring Location
Barium	1	19	Outfall
Iron	0.3	5.8	Outfall
Manganese	0.05	1.0	Outfall
Total Dissolved Gases	110% saturation	N/A	Dilution zone boundary
Nitrates	10	190	Outfall
pH	pH $\leq$8.5[c]	N/A	Dilution zone boundary
1,1-Dichloroethylene	0.0013[d]	0.13[e]	Dilution zone boundary
Tetrachloroethylene	0.003[d]	0.13[e]	Dilution zone boundary
1,1,1-Trichloroethane	0.2	3.8	Dilution zone boundary
Trichloroethylene	0.0012[d]	0.1[e]	Dilution zone boundary

(a) Criteria in mg/L.

(b) Mass loading based on effluent discharge rate of 1,600 gpm at the recommended discharge criteria concentration, except as noted otherwise.

(c) Receiving water pH may exceed 8.5 during certain periods. During such periods, pH criteria will be equal to receiving water pH.

(d) PQL for constituent, based on analysis by EPA Method 8010.

(e) Mass loading based on effluent discharge rate of 1,600 gpm at the Project Evaluation Criteria concentration.